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EXAMINER	
MOORE, IAN N	

ART UNIT	PAPER NUMBER
2616	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/522,185	LI ET AL.	
	Examiner	Art Unit	
	Ian N. Moore	2616	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *30 June 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3-12,26,38-49,74,91 and 175-192* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *179-182* is/are allowed.

6)☒ Claim(s) *1,3-6,9-11,26,38-43,45-49,74,91,175-178,183-192* is/are rejected.

7)☒ Claim(s) *7,8,12 and 44* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Objections

1. Claim 175 is objected to because of the following informalities:

Claim 175 recites, "a voice signal", "a fax signal", and "a data signal" in lines 7-8 and 9,11, and 13. It is unclear whether a voice signal", "a fax signal", and "a data signal" in line 9,11 and 13 are the same signals as recited in lines 7-8. (*Note- This objection has been raised in the previous office action*).

Claim Rejections - 35 USC § 112 (First Paragraph)

2. The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. New claims 184,187, 190 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Claim 184 recites, "adjusting complexity of signal processing algorithm comprises **selecting from a plurality of levels of functionality of an algorithm**" in lines 2-3. Applicant cited pages 71-73 and 113-115 of the specification that allegedly supports the claimed invention. However, nowhere in these cited pages or nowhere in the specification disclose what are the

levels of functionality, what includes an algorithm, how algorithm is being selected, how levels of functionality are being selected, or what is being selected.

Claim 187 and 190 are also rejected for the same reason as set forth above in claim 184.

Claim Rejections - 35 USC § 112 (second paragraph)

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

5. New Claims 184,187,190 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 184 recites, "adjusting complexity of signal processing algorithm comprises **selecting from a plurality of levels of functionality of an algorithm**" in lines 2-3. It is unclear whether an algorithm, levels of functionality, or both are being selected. Applicant cited pages 71-73 and 113-115 of the specification fail to clarify or disclose what are the levels of functionality, what includes an algorithm, how algorithm is being selected, or how levels of functionality are being selected.

Claim 187 and 190 are also rejected for the same reason as set forth above in claim 184.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

7. Claims 1,3, 49,175,178,183,184,187, and 190 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guy (US005187591A) in view of Bartholomew (US006292479B1) and Shaffer (US006411601B1).

Regarding Claims 1 and 49, Guy discloses a signal processing system (see FIG. 1 (for transmitter) and FIG. 5 (for receiver) of system of processing information; see col. 2, line 54-65), comprising:

a voice exchange (see FIG. 1, Aural module 104 (for transmitter), and FIG. 5 (for receiver)) for exchanging voice signals (see FIG. 1, analog voice signal 100) between a first telephony device (see FIG. 1, source of aural information 102 such as telephone; see col. 2, line 64 to col. 3, line 1; see col. 3, line 15-20; 39-56) and a network (see FIG. 2, a network that connects to multiplexer 46; see col. 6, line 15-19);

a full duplex data exchange (see FIG. 1, a combined system of Modulated data module 104 (for transmitter), see FIG. 5 (for receiver)) for exchanging data signals (see FIG. 1, modem 128) from a second telephony device (see FIG. 1, personal computer 126; see col. 2, line 67 to col. 4, line 16) with demodulated data signals from the local/line network (see FIG. 2, demodulator 24 (at transmitter) is sends to the receiver; see col. 3, line 59 to col. 5, line 15; and see FIG. 5, demodulated data is received from the transmission network (at receiver); see col. 6, line 19-37), wherein the duplex data exchange demodulates the data signals from the first telephony device (see FIG. 2, transformer 22 and packetizer 36 (at transmitter) transforms and packetizes data signals; see col. 3, line 59 to col. 5, line 15), outputs the demodulated data signals to the packet based network (see FIG. 2, transformed and packetized data signals are sent to a

network via line 50; see col. 6, line 15-19), remodulates the demodulated data signals from the network (see FIG. 5, depacketizer 64 and transformer 68; the receiver depacketizes and re-transforms the received signal; see col. 6, line 19-62), and outputs the remodulated data signals to the first telephony device (see FIG. 5, depacketized and transformed signal is sent toward the source of aural information 102; see col. 6, line 19-62; see col. 2, line 64 to col. 3, line 1; see col. 3, line 15-20; 39-56); and

a monitor (see FIG. 2, Discriminator 20) that monitors processor used by on or both of the voice exchange and the data exchange (see FIG. 1-2, Discriminator 20 monitors/detects processing of aural module and modulator/demodulator module; see col. 3, line 59 to col. 5, line 46), and that dynamically enables and disable signal processing functionality used by the one or both of the voice exchange and the data exchange (see col. 3, line 59 to col. 4, line 10; discriminator 20 dynamically enabling/directing determined voice signal processing functionality used by Aural module (for voice) thereby disabling/not-directing/stopping processing functionality used by a modulator/demodulator module (for data/fax); or discriminator 20 dynamically enabling/directing determined fax signal processing functionality used by a modulator/demodulator module (for data/fax), thereby disabling/not-directing/stopping processing functionality used by a Aural module (for voice)).

Guy does not explicitly disclose a packet based network. However, utilizing a packet based network such as Internet, ATM, or equivalents thereof, as a transmission medium for voice, data, and fax information is so well known in the art. In particular, Bartholomew teaches a signal processing system (see FIG. 3, Gateway 20 a-b) exchanging signals between telephony devices (see FIG. 3, 11 a-c) over a packet based network (see FIG. 3, Internet 50); see col. 9, line

15 to col. 10, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a packet based network (i.e. Internet) for transmission, as taught by Bartholomew in the system of Guy, so that it would be economical, especially for long distance calls, compared with the toll rates changed by long distance interexchange carriers; see Bartholomew col. 5, line 17-30.

Neither Guy nor Bartholomew explicitly discloses processor resources and controlling processor computation load. However, CPU, DSP, or computer controlling/managing computer processing power/capacity, computer-processing memory, and/or computer processing power consumption/usage are so well known in the computer art. In particular, Shaffer discloses a resource monitor (see FIG. 2, Resources availability monitor 42 of the gateway 10) that monitors processor resources used by one or both of voice processing (see FIG. 2, resource requirement module 40; see col. 4, line 25-30; voice only processing) and data processing (see FIG. 2, resource requirement module 40; see col. 4, line 25-35; video processing), and that dynamically enables (see FIG. 4, step 74, 84; based on DSP/CPU resource availability dynamically processing the call) and disable signal processing functionally (see FIG.4, 74,76,78,80; based on DSP/CPU resource availability dynamically holding/stopping/disabling the processing of a call) used by one or both of voice processing and the data processing to control processor computational load (see col. 6, line 60 to col. 7, line 50; processing of voice, video, or both to control DSP resources/load).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide processor resources and controlling processor computation load, as taught by Shaffer, in the combined system of Guy and Bartholomew, so that it would

provide securing network resources in a manner which is responsive to the availability of multiple network resources; see Shaffer col. 2, line 5-46.

Regarding Claim 3, the combined system of Guy and Bartholomew the packet based network as disclosed above in claim 1. Guy further discloses wherein the data signals from the network line are modulated by a voiceband carrier (see FIG. 2, source of modulated data 14 of fax/modem signals are modulated within voice band carrier; see col. 1, line 65 to col. 2, line 2; see col. 3, line 40-50;), and

the data exchange comprises a data pump (see FIG. 2, demodulator 24 at transmit side and modulator 70 at the receive side) for demodulating the data signals from the network line for transmission on the network (see col. 4, line 6-67; demodulates fax/modem signals from telephony/data line for transmission towards a network) and remodulating the data signals from the transmission network with the voice/aural/telephony carrier for transmission on the network/local line (see FIG. 5, modulator 70 of receiver re-modulates received data signals with voice/aural/telephony carrier for transmission on the telephony/data line); see col. 6, line 19-62).

Regarding Claim 175, Guy discloses a method for interfacing a plurality of telephony devices (see FIG. 1, Fax 110, Telephone/source of aural information 102, modem 128) with a network (see FIG. 2, a network that connects to multiplexer 46; see col. 6, line 15-19), the network adapted for transmission of packetized signals (see FIG. 1, packetizer 118 and multiplexer 122), the method comprising:

depacketizing an incoming packetized signal from the network (see FIG. 5, Depacketizer 64; see col. 6, line 19-62);

identifying the depacketized signal (see FIG. 5, Depacketizer 64) as a voice signal (see FIG. 1, Telephone/source of aural information 102), a fax signal (see FIG. 1, Fax 110), or a data signal (see FIG. 1, modem 128); see col. 2, line 60 to col. 3, line 16; see col. 6, line 19-62;

if the depacketized signal is a voice signal, performing a voice mode signal processing on the voice signal (see FIG. 5, transformer of a aural information 68 and controller 68; see col. 6, line 19-62);

if the depacketized signal is a fax signal, performing a fax relay mode signal processing (see FIG. 5, Modulator 70 and controller 66; see col. 6, line 19-62);

if the depacketized signal is a data signal, performing data modem relay mode signal processing (see FIG. Modulator 70 and controller 66; see col. 6, line 19-62); and

transmitting the depacketized processed signal to a corresponding type of telephony device the plurality telephony devices (see FIG. 1 and 5; see col. 6, line 19-62; the recover of original signal is send to corresponding Telephone, fax or modem);

dynamically enables and disable signal processing functionality used by the one or both of the voice exchange and the data exchange (see FIG. 1-2, Discriminator 20 monitors/detects processing of aural module and modulator/demodulator module; see col. 3, line 59 to col. 5, line 46; col. 3, line 59 to col. 4, line 10; discriminator 20 dynamically enabling/directing determined voice signal processing functionality used by Aural module (for voice) thereby disabling/not-directing/stopping processing functionality used by a modulator/demodulator module (for data/fax); or discriminator 20 dynamically enabling/directing determined fax signal processing functionality used by a modulator/demodulator module (for data/fax), thereby disabling/not-directing/stopping processing functionality used by a Aural module (for voice)).

Guy does not explicitly disclose a packet based network. However, utilizing a packet based network such as Internet, ATM, or equivalents thereof, as a transmission medium for voice, data, and fax information is so well known in the art. In particular, Bartholomew teaches a signal processing system (see FIG. 3, Gateway 20 a-b) exchanging signals between telephony devices (see FIG. 3, 11 a-c) over a packet based network (see FIG. 3, Internet 50); see col. 9, line 15 to col. 10, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a packet based network (i.e. Internet) for transmission, as taught by Bartholomew in the system of Guy, so that it would be economical, especially for long distance calls, compared with the toll rates changed by long distance interexchange carriers; see Bartholomew col. 5, line 17-30.

Neither Guy nor Bartholomew explicitly discloses processor resources and controlling processor computation load. However, CPU, DSP, or computer controlling/managing computer processing power/capacity, computer-processing memory, and/or computer processing power consumption/usage are so well known in the computer art. In particular, Shaffer discloses a resource monitor (see FIG. 2, Resources availability monitor 42 of the gateway 10) that monitors processor resources used by one or both of voice processing (see FIG. 2, resource requirement module 40; see col. 4, line 25-30; voice only processing) and data processing (see FIG. 2, resource requirement module 40; see col. 4, line 25-35; video processing), and that dynamically enables (see FIG. 4, step 74, 84; based on DSP/CPU resource availability dynamically processing the call) and disable signal processing functionally (see FIG.4, 74,76,78,80; based on DSP/CPU resource availability dynamically holding/stopping/disabling the processing of a call) used by one or both of voice processing and the data processing to control processor

computational load (see col. 6, line 60 to col. 7, line 50; processing of voice, video, or both to control DSP resources/load).

Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide processor resources and controlling processor computation load, as taught by Shaffer, in the combined system of Guy and Bartholomew, so that it would provide securing network resources in a manner which is responsive to the availability of multiple network resources; see Shaffer col. 2, line 5-46.

Regarding Claim 176, Guy discloses wherein the plurality of telephony devices include one or more of analog and digital telephone (Telephone/source of aural information 102), analog fax machines (see FIG. 1, fax 110), data modem (see FIG. 1, modem 128).

Regarding Claim 177, Bartholomew discloses wherein the packet based network is the Internet (see FIG. 3, Internet 50); see col. 9, line 15 to col. 10, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a packet based network (i.e. Internet) for transmission, as taught by Bartholomew in the system of Guy, for the same motivation as stated above in claim 175.

Regarding Claim 178, Guy discloses a method for integrated interfacing a plurality of telephony devices (see FIG. 1, Fax 110, Telephone/source of aural information 102, modem 128 at the transmitting side) to a network (see FIG. 2, a network that connects to multiplexer 46; see col. 6, line 15-19), the network adapted for transmission of packetized signals (see FIG. 1, packetizer 118 and multiplexer 122), the method comprising:

detecting human voice or lack thereof in a voice band signal base on pitch period of a voice band signal (see FIG. 2, Discriminator 20 with voice detection functionality; see col. 3, line 60 to col. 4, line 2; detecting voice pitch frequency/period of a signal)

packetizing a voice signal (see FIG. 1, Telephone/source of aural information 102), a fax signal (see FIG. 1, Fax 110), or a data signal (see FIG. 1, modem 128; see col. 2, line 60 to col. 3, line 16) in a packetiziation engine (see FIG. 1, packetizer 36) to generate a packetized signal based on detecting (see FIG. 2, a packetized signal transmitted by multiplexer 48 after detecting voice or fax signal; see col. 3, line 1 to col. 4, line 55; see col. 5, line 45 to col. 6, line 18); and

transmitting the packetized signal over the network to a far end telephony device (see FIG. 1, Fax 110, Telephone/source of aural information 102, or modem 128 at the remote/receiving side; see col. 2, line 60 to col. 3, line 16; also see FIG. 5 for receiving side; see col. 6, line 19-62).

Guy does not explicitly disclose a packet based network. However, utilizing a packet based network such as Internet, ATM, or equivalents thereof, as a transmission medium for voice, data, and fax information is so well known in the art. In particular, Bartholomew teaches a signal processing system (see FIG. 3, Gateway 20 a-b) exchanging signals between telephony devices (see FIG. 3, 11 a-c) over a packet based network (see FIG. 3, Internet 50); see col. 9, line 15 to col. 10, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a packet based network (i.e. Internet) for transmission, as taught by Bartholomew in the system of Guy, so that it would be economical, especially for long distance calls, compared with the toll rates changed by long distance interexchange carriers; see Bartholomew col. 5, line 17-30.

Regarding Claim 183, the combined system of Guy and Bartholomew discloses processor resources as set forth above in claim 1 and 49. Shaffer further discloses processor resources comprise one of processing capacity (see col. 7, line 40-50; transcoding DSP/CPU resources).

Regarding Claim 184,187, and 190, the combined system of Guy and Bartholomew discloses wherein dynamically adjusting complexity of signal processing algorithms comprises selecting from a plurality of levels of functionality of an algorithm (see col. 3, line 59 to col. 4, line 10; discriminator 20 selecting enabling/directing voice/fax signal processing algorithms/methods from a plurality of algorithms/method of voice and fax processing). Shaffer further discloses selecting from a plurality of levels of functionality of an algorithm (see col. 4, line 25-30; selection a method/algorithm of enabling/allowing of DSP processing from a plurality of DSP algorithms of processing (i.e. audio, video, etc.)).

8. Claims 4-6 and 9-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guy in view of Bartholomew and Shaffer, applied to claim 1 above, and further in view of Ohlsson (US006452950B1).

Regarding Claims 4 and 9, the combined system of Guy, Bartholomew and Shaffer discloses all limitation as set forth above in claim 1.

Neither Guy, Bartholomew nor Shaffer explicitly disclose a jitter buffer for receiving packets of varying delay and compensating fort the delay variation of packets. However, Ohlsson discloses a jitter buffer (see FIG. 2A-B, a combined system of Jitter buffer 10 and CPU/processor) for receiving packets of varying delay from the packet based network (see col. 1,

line 65-66; see col. 2, line 29-32; Internet, or packet communication system) and compensating fort the delay variation of packets (see col. 2, line 20-56; see col. 5, line 25 to col. 7, line 66). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a jitter buffer for delay varying and compensation, as taught by Ohlsson, in the combined system of Guy, Bartholomew and Shaffer, so that it would provide a smooth data feed to an application without excessive delays, and the use of network bandwidth more intelligently; see Ohlsson col. 1, line 63-67; see col. 2, line 20-39.

Regarding Claims 5 and 10, the combined system of Guy, Bartholomew, Shaffer and Ohlsson discloses all limitation as set forth above in claims 1 and 4.

Neither Guy, Bartholomew, nor Shaffer explicitly discloses a jitter buffer outputs an isochronous stream. However, Ohlsson discloses a jitter buffer (see FIG. 2A-B, a combined system of Jitter buffer 10 and CPU/processor) outputs an isochronous stream (see col. 2, line 20-56; see col. 5, line 25 to col. 7, line 66; jitter buffer transmits/outputs the sequential/continuous stream of data). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a jitter buffer for delay varying and compensation for sequential/continuous stream of data, as taught by Ohlsson, in the combined system of Guy, Bartholomew and Shaffer, so that it would provide a smooth data feed to an application without excessive delays, and the use of network bandwidth more intelligently; see Ohlsson col. 1, line 63-67; see col. 2, line 20-39.

Regarding Claim 6, Guy discloses wherein the data pump transmits the received data signals to the network line at a transmit rate (see FIG. 5, modulator 70 of receiving side transmits

with a transmit rate the received data signals towards the telephony/data line); see col. 6, line 19-62.

Regarding Claim 11, the combined system of Guy, Bartholomew, Shaffer and Ohlsson discloses all limitation as set forth above in claim 1 and 9. Ohlsson discloses a jitter buffer comprises a voice queue which buffer the received voice signals (see FIG. 2A-B, Jitter buffer 10 queues the voice signals) for a holding time and a voice synchronizer (see FIG. 2A, CPU/processor) which adaptively adjusts the holding time of the voice queue (see col. 2, line 20-56; see col. 5, line 25 to col. 7, line 66). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a jitter buffer for queuing and processor for controlling jitter buffer holding time, as taught by Ohlsson, in the combined system of Guy, Bartholomew and Shaffer, so that it would provide a smooth data feed to an application without excessive delays, and the use of network bandwidth more intelligently; see Ohlsson col. 1, line 63-67; see col. 2, line 20-39.

9. Claims 26,45,47,48,74 and 91 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guy (US005187591A) in view of Bartholomew (US006292479B1).

Regarding Claims 26 and 74, Guy discloses a signal processing system (see FIG. 1 (for transmitter) and FIG. 5 (for receiver) of system of processing information; see col. 2, line 54-65), comprising:

a voice exchange (see FIG. 1, Aural module 104 (for transmitter), and FIG. 5 (for receiver)) for exchanging voice signals (see FIG. 1, analog voice signal 100) between a first telephony device (see FIG. 1, source of aural information 102 such as telephone, or personal

computer 126; see col. 2, line 64 to col. 3, line 1; see col. 3, line 15-20; 39-56) and a network (see FIG. 2, a network that connects to multiplexer 46; see col. 6, line 15-19);

a full duplex data exchange (see FIG. 1, a combined system of Modulated data module 104 (for transmitter), see FIG. 5 (for receiver)) for exchanging data signals (see FIG. 1, modem 128) from a second telephony device (see FIG. 1, personal computer 126, or source of aural information 102 such as telephone; see col. 2, line 67 to col. 4, line 16) with demodulated data signals from the local/line network (see FIG. 2, demodulator 24 (at transmitter) is sends to the receiver; see col. 3, line 59 to col. 5, line 15; and see FIG. 5, demodulated data is received from the transmission network (at receiver); see col. 6, line 19-37), wherein the duplex data exchange demodulates the data signals from the second telephony device (see FIG. 2, transformer 22 and packetizer 36 (at transmitter) transforms and packetizes data signals; see col. 3, line 59 to col. 5, line 15), outputs the demodulated data signals to the packet based network (see FIG. 2, transformed and packetized data signals are sent to a network via line 50; see col. 6, line 15-19), remodulates the demodulated data signals from the network (see FIG. 5, depacketizer 64 and transformer 68; the receiver depacketizes and re-transforms the received signal; see col. 6, line 19-62), and outputs the remodulated data signals to the second telephony device (see FIG. 5, depacketized and transformed signal is sent toward the source of aural information 102; see col. 6, line 19-62; see col. 2, line 64 to col. 3, line 1; see col. 3, line 15-20; 39-56); and

a human voice detector (see FIG. 2, Discriminator 20 with voice detection functionality) that detects human voice base on pitch period of a voice band signal from one or both of the first and second telephony device (see col. 3, line 60 to col. 4, line 2; detecting voice pitch frequency/period from end users);

a Call discriminator (see FIG. 2, Discriminator 20 with differentiating type of call functionality), for selectively enabling at least one of the voice exchange and the data exchange based at least upon the detection of human voice (see FIG. 1-2, aural module and modulator/demodulator module; see col. 3, line 59 to col. 5, line 46; discriminating as voice or fax after detecting variation in the frequency/period of signals).

Guy does not explicitly disclose a packet based network. However, utilizing a packet based network such as Internet, ATM, or equivalents thereof, as a transmission medium for voice, data, and fax information is so well known in the art. In particular, Bartholomew teaches a signal processing system (see FIG. 3, Gateway 20 a-b) exchanging signals between telephony devices (see FIG. 3, 11 a-c) over a packet based network (see FIG. 3, Internet 50); see col. 9, line 15 to col. 10, line 20). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a packet based network (i.e. Internet) for transmission, as taught by Bartholomew in the system of Guy, so that it would be economical, especially for long distance calls, compared with the toll rates changed by long distance interexchange carriers; see Bartholomew col. 5, line 17-30.

Regarding Claim 45, the combined system of Guy and Bartholomew discloses all limitation as disclosed above in claim 26. Guy discloses a voice encoder for encoding voice signals from the first telephony device into voice signal packet for the network (see FIG. 2, CODEC 16 and packetizer/depacketizer 118/64; see col. 3, line 45-59).

Regarding Claim 47, the combined system of Guy and Bartholomew discloses all limitation as disclosed above in claim 26. Guy discloses a fax exchange ((see FIG. 1, a combined system of Modulated data module 104 (for transmitter), see FIG. 5 (for receiver)) for exchanging

fax signals (see FIG. 1, Fax signal114) from a third telephony device (see FIG. 1, Fax 110) with demodulated fax signals from local/line network (see FIG. 2, demodulator 24 (at transmitter) is sends to the receiver; see col. 3, line 59 to col. 5, line 15; and see FIG. 5, demodulated data is received from the transmission network (at receiver); see col. 6, line 19-37), wherein the call discriminator (see FIG. 2, Discriminator 20) selectively enables the fax exchange (FIG. 1-2, modulator/demodulator module for fax; see col. 3, line 59 to col. 5, line 46).

Regarding Claim 48 and 91, the combined system of Guy and Bartholomew the packet based network as disclosed above in claim 26. Guy further discloses wherein the fax signals from the third telephony device are modulated by a voiceband carrier (see FIG. 2, source of modulated data 14 of fax/modem signals are modulated within voice band carrier; see col. 1, line 65 to col. 2, line 2; see col. 3, line 40-50;), and

the data exchange comprises a data pump (see FIG. 2, demodulator 24 at transmit side and modulator 70 at the receive side) for demodulating the fax signals from the third telephony device for transmission on the transmission network (see col. 4, line 6-67; demodulates fax/modem signals from telephony/data line for transmission towards a network) and remodulating the demodulated the fax signals from the transmission network with the voice/aural/telephony carrier for transmission to the third telephony device (see FIG. 5, modulator 70 of receiver re-modulates received data signals with voice/aural/telephony carrier for transmission on the telephony/data line); see col. 6, line 19-62).

10. Claims 38-43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guy in view of Bartholomew as applied to claim 26 above, and further in view of Elliott (US006614781B1).

Regarding Claims 38 and 40, the combined system of Guy and Bartholomew discloses all limitation as set forth above in claim 26. Guy discloses a voice decoder for decoding packets of the voice signal (see FIG. 2, CODEC 16 and packetizer/depacketizer 118/64; see col. 3, line 45-59).

Neither Guy nor Bartholomew explicitly disclose a voice activity detector, which detects the voice signals without speech, or lost voice signal, and a comfort noise generator/recovery, which inserts comfort noise in place of the voice signals without speech, or process the voice signal to compensate for the lost voice signal. However, Elliott discloses a voice decoder for decoding packets of the voice signals (see col. 67, line 20-40; CODEC),

a voice activity detector which detects the voice signals without speech or lost voice signal (see FIG. 11B, silent detection 1150; see FIG. 11C, delay for jitter 1124; see col. 67, line 1-36; 53-55) and

a comfort noise generator/recovery engine which inserts comfort noise in place of the voice signals without speech, or process the voice signal to compensate for the lost voice signal (see FIG. 11C, 1124,1126; inserting comfort noise for silent interval thereby recovering the lost signal; see col. 67, line 52 to col. 68, line 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide inserting comfort noise for a silent interval, as taught by Elliott, in the combined system of Guy and Bartholomew,

so that it voice traffic can be transmitted transparently over a packet switched data network; see Elliott col. 4, line 11 to col. 7, line 25.

Regarding Claim 39, the combined system of Guy, Bartholomew and Elliott discloses all limitation as set forth above in claim 26 and 38. Elliott further discloses a comfort noise estimator which generates comfort noise parameters from at least a portion of the voice signals without speech (see FIG. 11B, silent detection 1150; see FIG. 11C, 1124,1126; generating comfort noise for silent interval (i.e. a portion without speech)), the comfort noise generator being responsive to the comfort noise parameters (see col. 67, line 1-36; 53-55; see col. 67, line 52 to col. 68, line 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate comfort noise for a silent interval, as taught by Elliott, in the combined system of Guy and Bartholomew for the same motivation as stated above in claim 38.

Regarding Claim 41, the combined system of Guy and Bartholomew discloses all limitation as set forth above in claim 26. Guy discloses a voice decoder for decoding packets of the voice signal (see FIG. 2, CODEC 16 and packetizer/depacketizer 118/64; see col. 3, line 45-59).

Neither Guy nor Bartholomew explicitly discloses a voice activity detector, which suppress the voice signals without speech. However, Elliott discloses a voice encoder for encoding packets of the voice signals (see col. 67, line 20-40; CODEC),

a voice activity detector which suppress the voice signals without speech (see FIG. 11B, silent detection/suppressing 1150; see col. 67, line 1-36; 53-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide

suppressing silent interval, as taught by Elliott, in the combined system of Guy and Bartholomew, so that it voice traffic can be transmitted transparently over a packet switched data network; see Elliott col. 4, line 11 to col. 7, line 25.

Regarding Claim 42, the combined system of Guy, Bartholomew and Elliott discloses all limitation as set forth above in claim 26 and 41. Elliott further discloses a comfort noise estimator that generates comfort noise parameter when the voice activity detector suppress the voice signals without speech (see FIG. 11C, 1124,1126; generating comfort noise for suppressed silent interval; see col. 67, line 52 to col. 68, line 4). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to generate comfort noise for a suppressed silent interval, as taught by Elliott, in the combined system of Guy and Bartholomew for the same motivation as stated above in claim 41.

Regarding Claim 43, the combined system of Guy and Bartholomew discloses all limitation as set forth above in claim 26. Guy discloses a voice decoder for decoding packets of the voice signal (see FIG. 2, CODEC 16 and packetizer/depacketizer 118/64; see col. 3, line 45-59).

Neither Guy nor Bartholomew explicitly discloses an echo canceller for canceling decoded voice signals echoes. However, Elliott discloses a voice decoder for decoding packets of the voice signals (see FIG. 11C, see col. 67, line 20-40; CODEC),

an echo canceller for canceling decoded voice signals echoes (see FIG. 11C, cancel echo 1130; see col. 67, line 1-36; 53-55). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide suppressing silent interval, as taught by Elliott, in the combined system of Guy and Bartholomew, so that the voice traffic

can be transmitted transparently over a packet switched data network; see Elliott col. 4, line 11 to col. 7, line 25.

11. Claim 46 is rejected under 35 U.S.C. 103(a) as being unpatentable over Guy in view of Bartholomew as applied to claim 26 and 45 above, and further in view of Oran (US006775265B1).

Regarding Claim 46, the combined system of Guy and Bartholomew discloses all limitation as set forth above in claim 26 and 45.

Neither Guy nor Bartholomew explicitly discloses a tone exchange comprising a DTMF detector for detecting a DTMF signal and generating a DTMF packet for the network response the DTMF signal, the DTMF detector muting the voice signal packets when a DTMF signal is detected.

However, Oran discloses a tone exchange comprising a DTMF detector (see FIG. 4, DTMF detector 40 and see FIG. 6, DTMF generator 54) for detecting a DTMF signal from the first telephony device and generating a DTMF packet for the packet based network response the DTMF signal, the DTMF detector muting the voice signal packets when a DTMF signal is detected (see FIG. 4-6; abstract; see col. 3, line 16-29; see col. 4, line 30-46). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a DTMF detector and muting process, as taught by Oran, in the combined system of Guy and Bartholomew, so that it would accurately detect and transmit DTMF without adding additional end-to-end delay to the packet network; see Oran col. 3, line 1-29.

12. Claims 185,188 and 191 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guy in view of Bartholomew and Shaffer, applied to claim 1, 49 and 175 above, and further in view of Sanders (US006704308B2).

Regarding Claims 185, 188 and 191, the combined system of Guy, Bartholomew and Shaffer discloses dynamically adjusting complexity of signals processing algorithms as set forth above in claim 1,49 or 175.

Neither Guy, Bartholomew, nor Shaffer explicitly disclose bypassing or disabling an echo canceller. However, Sanders discloses bypassing or disabling an echo canceller (see col. 8, line 12-20; for digitized voice data that does require echo canceling, echo canceller is bypassed). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to bypass echo canceller, as taught by Sanders, in the combined system of Guy, Bartholomew and Shaffer, so that it would provide flexible architecture that can be readily adapted to changing customer demands and changes in processing capability; see Sanders col. 1, line 65-67.

13. Claims 186,189 and 192 are rejected under 35 U.S.C. 103(a) as being unpatentable over Guy in view of Bartholomew, applied to claim 26, 74 and 178 above, and further in view of Griffin (US005826222A).

Regarding Claims 186, 189 and 192, the combined system of Guy and Bartholomew discloses dynamically adjusting complexity of signals processing algorithms, and pitch period/frequency of voice signals as set forth above.

Neither Guy nor Bartholomew explicitly discloses autocorrelation function and a plurality of power measurements. However, Griffin discloses the estimate of pitch period of the voice band signal (see FIG. 8, estimate 60; see FIG. 9, estimate 68, or FIG. 10, estimates 76 of pitch period of voice signal; see col. 5, line 21-42) is calculated by applying an autocorrelation function (see FIG. 7, autocorrelation 54; see col. 9, line 65 to col. 10, line 4) and a plurality of power measurement to the voice band signal (see col. 9, line 25-55; measured/determined total/plurality of voice power/energy values/measured). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to autocorrelation function and a plurality of power measurements, as taught by Griffin, in the combined system of Guy and Bartholomew, so that it would reduce computation; see Griffin col. 10, line 1-4.

Allowable Subject Matter

14. **Claims 179-182** are allowed.

15. **Claims 7,8,12 and 44** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Response to Arguments

16. Applicant's arguments with respect to claims 1,3-6,9-11,26,38-43,45-49,74,91,175-178, 183-192 have been considered but are moot in view of the new ground(s) of rejection.

Regarding claims 1,3-6,9-11,49,175-178, the applicant argued that, "...the combined system of Guy and Bartholomew fails to teach, suggest, or discloses...a signal processing

system...dynamically enabling and disabling signal processing functionality used by one or both of the voice exchange and the data exchange..." in page 17, paragraph 2; page 19, paragraph 2; page 20, paragraph 3.

In response to applicant's argument, the examiner respectfully disagrees with the above argument.

The combined system of Guy, Bartholomew and Shaffer discloses all claimed invention as set forth above in rejection. In particular, Guy discloses a monitor (see FIG. 2, Discriminator 20) that monitors processor used by on or both of the voice exchange and the data exchange (see FIG. 1-2, Discriminator 20 monitors/detects processing of aural module and modulator/demodulator module; see col. 3, line 59 to col. 5, line 46), and that dynamically enables and disable signal processing functionality used by the one or both of the voice exchange and the data exchange (see col. 3, line 59 to col. 4, line 10; discriminator 20 dynamically enabling/directing determined voice signal processing functionality used by Aural module (for voice) thereby disabling/not-directing/stopping processing functionality used by a modulator/demodulator module (for data/fax); or discriminator 20 dynamically enabling/directing determined fax signal processing functionality used by a modulator/demodulator module (for data/fax), thereby disabling/not-directing/stopping processing functionality used by a Aural module (for voice)).

Regarding claims 26,38-43,45-48,71,91,178, the applicant argued that, "...the combined system of Guy and Bartholomew fails to teach, suggest, or discloses...a signal processing system...based at least upon the detection of human voice..." in page 18, paragraph 2-3; page 20, paragraph 1; page 21, paragraph 3; page 22-23.

In response to applicant's argument, the examiner respectfully disagrees with above argument above.

The combined system of Guy and Bartholomew discloses all claimed invention as set forth above in rejection. In particular, Guy discloses a human voice detector (see FIG. 2, Discriminator 20 with voice detection functionality) that detects human voice base on pitch period of a voice band signal from one or both of the first and second telephony device (see col. 3, line 60 to col. 4, line 2; detecting voice pitch frequency/period from end users).

Conclusion

17. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

18. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Ian N. Moore whose telephone number is 571-272-3085. The examiner can normally be reached on 9:00 AM- 6:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on 571-272-7629. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

INM
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